



September
2007

California Postsecondary Education Commission

Public Higher Education Performance Accountability Framework Report: Goal – Contributions to Economic, Civic, and Social Development Measure: How is California Education Doing?

Consistent with the Commission's higher education accountability framework, this report summarizes major findings and conclusions from three 2007 Commission reports assessing the contributions of postsecondary education to California's social, civic, and economic well-being.

Contents

Summary of Findings.....	1
Why Economic, Civic and Social Development are Important.....	2
What the Measures Show.....	3
Conclusions and Policy Choices.....	8

The Commission advises the Governor and the Legislature on higher education policy and fiscal issues. Its primary focus is to ensure that the State's educational resources are used effectively to provide Californians with postsecondary education opportunities. More information about the Commission is available at www.cpec.ca.gov.

Commission Report 07-18

Summary of Findings

- The educational attainment of California's population is growing more slowly than the national average, posing a significant threat to the State's long-term economic competitiveness.
- Younger people have lower levels of education than the retiring baby boomers they will replace.
- An ethnicity-based disparity in educational attainment is felt most acutely by the growing population of Latinos in California.
- California relies on domestic and international migration to make up for a shortage of degree holders in the State's workforce. At the same time many immigrants arrive with less than a high school education.
- California's higher education institutions lack the resources and capacity to supply enough college graduates to fill all the high-paying jobs the State's employers have available. Employers are paying a premium to import the talent they need while a large portion of the State's population lacks the education to fill these jobs.
- Earning a degree provides a substantial increase in income. Compared to an average Californian with a high school level education, possession of an associate degree increases income by 47%, a baccalaureate degree increases income by 108% and a graduate or professional degree increases income by 189%.
- College reduces gender-based income inequities. The income gap between men and women with associate degrees is about half the gap between men and women without a high school diploma.

- Higher education also has significant benefits for Latinos, African Americans and Asians. Census data show that baccalaureate degree earners in these groups more than double their income levels compared to those with only a high school level education.
- Community college and extension programs can significantly increase even non-degree earner incomes by improving English proficiency. On average, individuals with a high school level education increased earnings by 136% by becoming English proficient.
- California offers greater income rewards for earning a baccalaureate degree compared to New York, Washington, Massachusetts and Florida,
- College graduates are valued for their high level of general skills and their ability to learn and adapt quickly. A key contribution of higher education to meeting labor market demand is the continuing focus on skills development and maintaining the quality of postsecondary education, while expanding the number of students who earn degrees.
- The Commission was able to assess the adequacy of degree earning because qualifying for employment is tightly linked to specific degrees. The Commission found that demand for degree earners in a few occupations, such as computer science, nursing, teaching, and engineering, is growing. State policymakers should continue to foster postsecondary education efforts to address this demand.
- To improve the alignment of postsecondary investments and economic outcomes, California needs better data tracking the employment outcomes of postsecondary students. The Commission supports timely and accurate reporting of student economic outcome data to students, campuses and policymakers so that all parties can make decisions with labor market trends in mind.

Why Economic, Civic, and Social Development are Important

California will invest \$15 billion this year in higher education. It is important for policymakers and the public to know what benefits are generated by this substantial investment. The Commission measured economic, civic and social outcomes by looking at three measures: educational attainment, earnings of college degree holders, and the alignment of degree earning with employment demand in California's labor market. Educational attainment matters for California because the state's human capital is a key advantage that must be maintained and improved for the State to remain competitive. Businesses locate and develop in California because the State has a workforce with the skills and ingenuity to make business succeed. The earnings of degree holders are an important measure of higher education's contribution to the state because earnings reflect how productive degree holders are in comparison with other workers. Finally,

Public Higher Education Accountability Framework

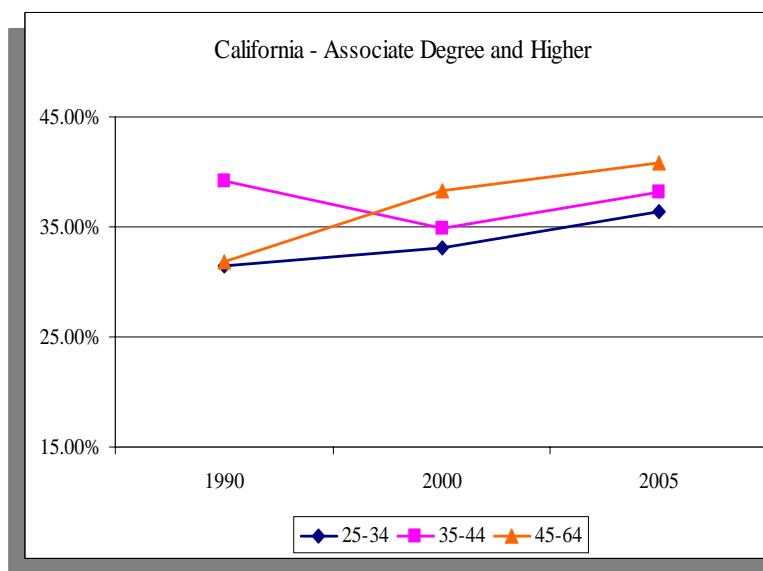
The public's investment in higher education should be measured by outcomes. As California's independent higher education planning and coordinating body, the Commission is in a unique position to assess performance without bias or conflict of interest. Under State law, the Commission is the only public agency with the data needed to assess student success across the University of California, California State University and California Community College systems. The Commission uses this data, coupled with other relevant State and national higher education data, to compile the performance assessment presented here. The Commission has put a priority on improving public confidence in the administration and delivery of public postsecondary education by increasing public knowledge of student outcomes, transparency of higher education decision making, and efficient achievement of the best educated and prepared workforce and population.

supplying skilled employees to California businesses is a key way higher education contributes to the state's economy. Understanding how the degrees awarded match up against what employers need provides an important indicator of how well higher education is aligned with the economy.

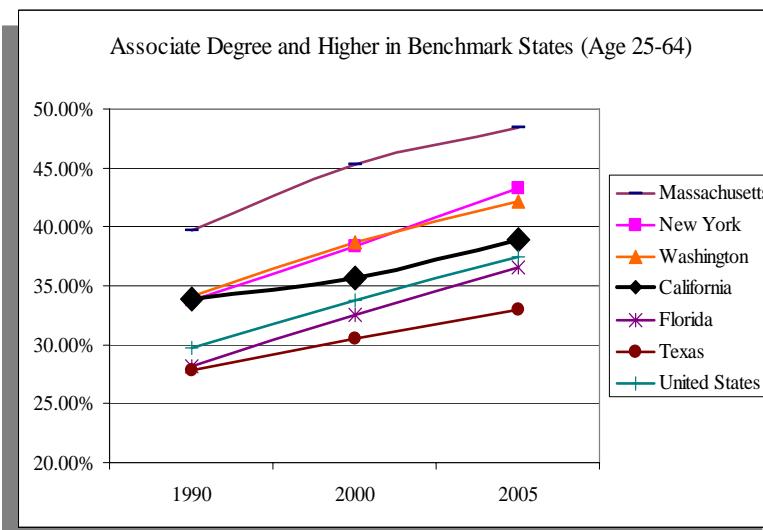
What the Measures Show

Measure: Educational Attainment

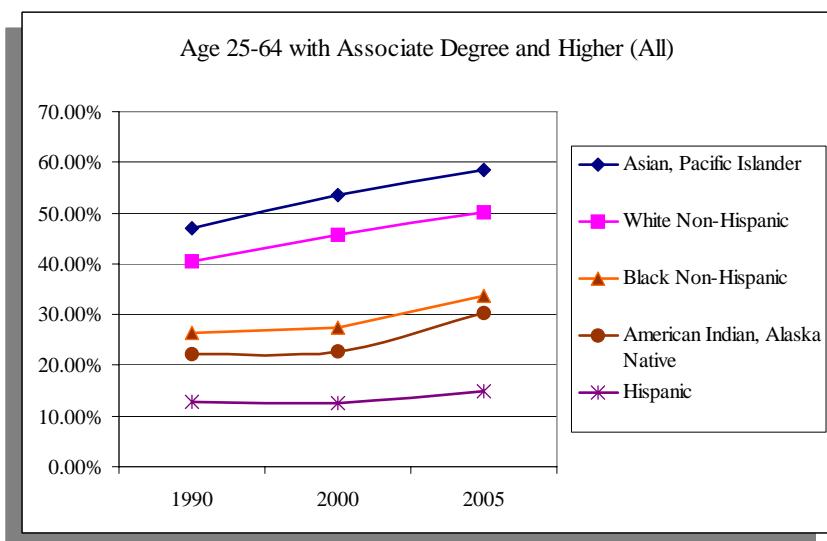
California's workforce is better educated than the nation as a whole. However, a number of experts perceive a series of risks on the horizon. Perhaps most troubling, younger workers in line to replace retiring baby boomers are less educated. About 41% of California's 45- to 64-year-olds have at least an associate level degree, compared to 38% of 35- to 44-year-olds and 36% of 25- to 34-year-olds. To close the educational attainment gap, younger workers will either need to earn more degrees or employers will need to import degree holders from elsewhere to meet their needs. The efforts of high-tech firms to expand the number of H1-B visas for highly-educated workers indicates that employers are already experiencing a shortage of highly-educated employees and are expecting the shortfall to grow.



Educational attainment in California's population increased from 1990 to 2005. The percentage of the population between 25 and 64 years of age with an associate degree or higher increased from 33.9% to 38.9%. The percentage of the population between the ages of 25 and 64 with less than a high school education fell from 21.2% to 18.7%, despite a net influx of less-educated immigrants. Data also show that the State's educational attainment rate has slowed compared with other states. California risks falling below the national average if educational attainment does not improve. Educational attainment may not be increasing quickly enough to meet the needs of the labor market. When employers have to seek educated workers from outside the State, it imposes costs on employers and limits opportunities for Californians. If obtaining needed workers becomes too costly, businesses will consider relocating jobs elsewhere.



Educational attainment is not evenly distributed among population groups in California. Whites and Asians tend to have much more education than other ethnic groups. For example 50.1% of Whites and 58.6% of Asians aged 25 to 64 attained an associate degree or higher by 2005, compared to 14.9% of Latinos and 33.7% of African Americans. Differences are even more dramatic at lower levels of attainment. 43.7% of Latinos have less than a high school diploma, compared to 5.3% of Whites, 10.1% of African Americans and 11% of Asians. This gap is particularly troubling because Latinos are the fastest growing group in California's workforce.



The last 15 years have seen a dramatic change in degree attainment for men and women. More women now hold degrees than men and this trend is growing. While educational attainment increased for both genders, it has grown much more rapidly for women.

Trends in educational attainment are affected by the large flows of people into and out of the State, as well as by the degrees earned by California residents. Between 1995 and 2000, 2 million people between the ages of 22 and 64 moved to California from other states and other countries and 1.5 million left California, according to census data. The largest gains in population were at the top and bottom of the educational distribution. California experienced a net gain of about 500,000 residents. Most new residents are well educated: 224,000 had a baccalaureate degree and 141,000 had a postgraduate degree. This net gain is equivalent to 40% of the baccalaureate degrees awarded by all California universities, public and private and equivalent to 14% of all post-graduate degrees, during this period. Net gains for associate degrees were small—just 2,668. The State had a net gain of 1,972 new residents with a high school diploma or GED. At the bottom of the education distribution, California had a large net gain of 140,651 residents who had less than a high school education.

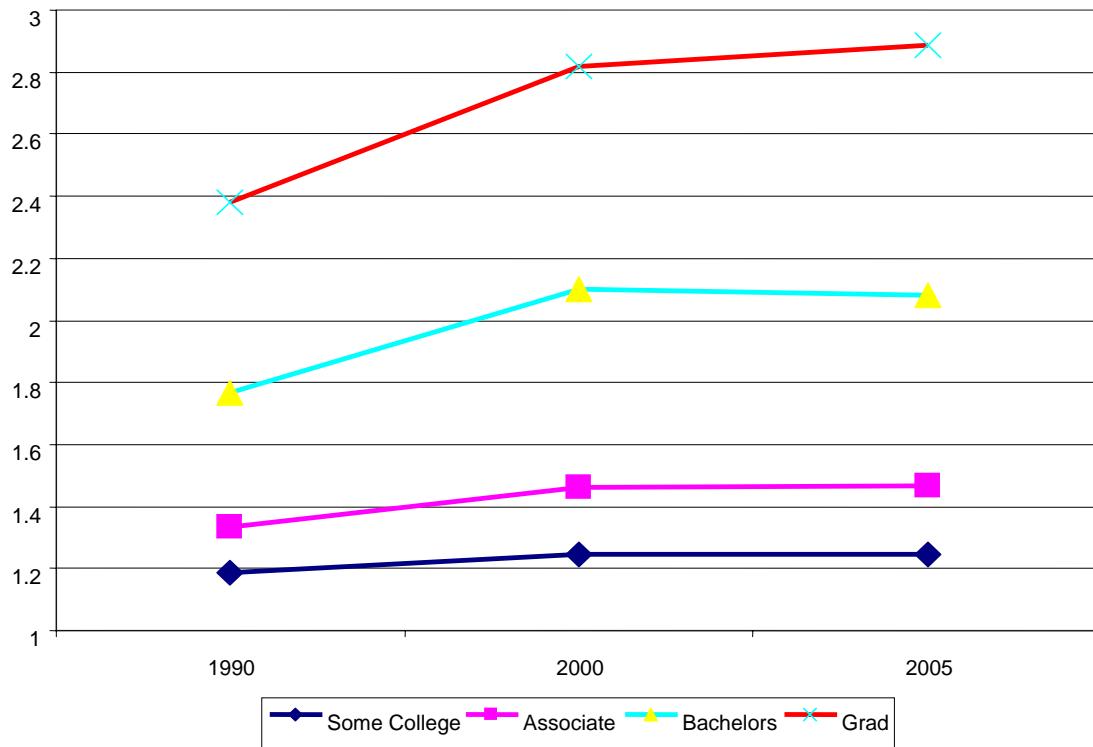
Measure: Per Capita Earnings

The Commission examined per capita income based on educational attainment, using census data. The income levels of Californians with at least a high school diploma or a GED were compared with those with some college or a degree. The impacts of postsecondary education were measured at four levels—some college, associate degree, baccalaureate degree, and graduate degree. By calculating average income¹ in each group the Commission obtained a measure of the financial reward for educational attainment. In 2005, for example, the average income of a person with a high school diploma or GED was \$27,000. The average income for a person with a baccalaureate degree was \$56,000. In this case, the reward attached to obtaining a BA was 2.08 times a high school graduate's average income.² In 1990,

¹ The Commission examines wage and salary income for those in the civilian labor force aged 18 and older.

² There are limits to this interpretation, of course. The people who have a baccalaureate degree may have chosen to obtain the degree because they are more able. This may exaggerate the reward that a person in the high school educated group would get by obtaining a bachelor's degree.

Financial Reward for Education - California: 1990-2005
 The Income of Those with a Particular Degree
 Divided by the Income of Those with a High School Diploma or GED



the financial reward for earning a baccalaureate degree was earnings 77% higher than a high school educated person. This number rose to 110% by 2000, and fell slightly to 108% by 2005.

The financial reward for obtaining a baccalaureate degree in California is large relative to the other states that the Commission examined for comparison.³ Only Texas offered a greater reward than California for having a baccalaureate degree. Since California has a relatively high amount of in-migration of advanced degree holders, this may mean that too few high quality graduates are produced locally to satisfy the needs of California's businesses.

In 2005, the financial reward to obtaining a baccalaureate degree was 3% higher for men than women in California, and 6% higher nationally. Incomes earned by men are still higher than those of women in California, but the ratio is declining over time. Males with a baccalaureate degree earned 61% more than Females on average in 1990, but by 2005 this dropped to 45%, following a similar national trend.

Educational attainment also affects the equity of male-to-female earnings. The ratio of male-to-female earnings in California is greatest for those without a high school diploma (1.69), dropping as education increases for those with associate's degrees (1.34), and then rising again for those with graduate or professional degrees (1.50). This follows a similar national pattern and supports on-going concerns about gender-based income inequities.

³ Our benchmark states are Florida, Massachusetts, New York, Texas, and Washington.

The Commission also examined the impacts of higher education on mitigating race-based income inequities. Whites with a baccalaureate degree in California earned 17% more than African Americans and 40% more than Latinos. This is better than the US average for African Americans, and worse for Latinos. This does not seem to be getting better over time. In 1990, Whites with a baccalaureate degree earned only 30% more than Latinos so the pay differential has increased substantially.

Yet, college still provides significant financial rewards. The financial return to a baccalaureate degree⁴ for Latinos (2.46), African Americans (2.10) and Asians (2.10) are all greater than the financial return to education for Whites (1.93). This suggests that if low-cost, high quality degree programs are available, there should be plenty of incentive for these groups to increase their education.

It is often important to remember, that the most important skills for increasing personal income are not just degree earning. For example, learning English can be very valuable in enhancing one's income. In 2005, a person with a high school education or GED who "did not speak English well at all" increased income by 90% by getting a baccalaureate degree. This same person could increase income on average by 136% by learning to "speak English well" without getting a college degree.

Measure: Match of Degrees Awarded and Labor Market Demand

Between 1995 and 2000 California employers imported 224,000 baccalaureate degree holders and 141,000 people with advanced degrees to fill jobs. A number of studies, including recent research by the Public Policy Institute of California (PPIC), predict a continuing strong demand for college graduates in California. PPIC's research predicts that by 2025, 41% of all California jobs will require a baccalaureate degree or higher, compared to 31% today—an increase of 3.5 million jobs for people with baccalaureate degrees.⁵

The significant importing of college-educated workers clearly indicates a shortage of college graduates in California's economy. Unfortunately for researchers trying to assess the alignment of specific degree earning to State labor market needs, there is an absence of data linking specific degree earning with employment and income outcomes for students.

However, there are some critical California occupations that require technical skills that only a few college disciplines address. These include computer-related fields, engineering, nursing and other health-care professions, and teaching. The Commission was able to assess the success of California universities and colleges in producing enough graduates to meet current and future demand.

Computer Occupations: A Major Shortfall

The demand for computer professionals cannot be satisfied by new graduates from California's higher education institutions. In 2005, California's openings approached 15,200 jobs, while graduates from the CSU, the UC and independent institutions at the baccalaureate level and above totaled just under 8,600, a shortfall of nearly 6,600 graduates. This shortfall may be even more pronounced because some of the 2,666 masters graduates and the 198 doctorate graduates already held baccalaureates in the field, so these higher-level graduates reduced the stock of baccalaureate degree holders available to work.

⁴ The financial return to baccalaureate degree holders is calculated thus: Mean income for people with a bachelor's degree is divided by the mean income of people with a high school degree or GED.

⁵ Johnson, Hans P. & Reed, Deborah (2007) "Can California Import Enough College Graduates to Meet Workforce Needs?", *California Counts: Population Trends and Profiles*, v. 4., n.4.

Engineering Occupations: A Possible Shortfall

Openings for engineers created by growth and people leaving the field totaled just over 9,400 in 2005 at the same time that California higher education institutions conferred 11,150 new degrees on baccalaureate, master's, and doctoral candidates. However, to the extent that the 4,038 master's candidates and 864 doctoral candidates were already engineers with baccalaureate degrees, they have not added to the stock of engineers in California in number but simply enhanced their skills with the masters and doctorate training. Counting the people with baccalaureate engineering degrees as adding to the pool of engineers, we see only 6,250 new engineers in California, which falls far short of the 9,400 new jobs in the state.

Nurses: Almost enough

California higher education institutions graduated a little more than 10,400 nurses⁶ in 2005, at the same time as the number of California job openings for nurses edged over 11,000⁷, leaving a shortfall of just 600 nurses. The recent extraordinary policies and incentives and the focus of California's higher learning institutions have produced nearly enough nurses to fill newly available jobs. However, those programs and efforts must continue into the future in order to sustain this near balance of supply and demand. The importance of continuing support for nursing production is underscored by the fact that approximately 800 of the 2005 nursing degree recipients completed masters and doctoral level programs and may already be a part of the state nursing workforce. Even if half of this number is comprised of new out-of-state workers, California's shortfall of new nurses may be closer to 1,000.

Other Healthcare Occupations: Keeping up with demand, except for pharmacists

The demand for other healthcare workers has been growing at nearly the same rate as the demand for nurses because the same conditions (rising income, aging population, more focus on health) spur the demand. California's higher education institutions are keeping up with the demand across this whole contingent by producing just over 6,100 graduates annually relative to just under 6,000 openings—essentially a balance. Within the broad category of other healthcare professionals, two areas warrant attention; these include pharmacists and physicians assistants.

Job openings for pharmacists in California totaled 1,030 in 2005 while California pharmacy programs produced only 577 new pharmacists. It would take a major expansion of pharmacy programs to graduate enough pharmacists to satisfy the local demand for their services. The implications of this imbalance are not clear, which raises the question of whether some incentives or policies should be instituted to address this imbalance, or whether continuing to attract out-of-state pharmacists to fill these positions is of concern.

A lesser imbalance exists for physicians assistants. In 2005, 310 positions opened in California while qualified graduates numbered 164. Doubling the graduation rate of various programs would be required in order to balance the number of graduates with the number of openings. If that is a desirable end, some relatively major expansions of the existing programs would be required.

As a side note, the number of medical doctors graduated in the state compares well with the number of job openings. Medical schools in the state graduated nearly 1,200 MDs in 2005 while openings totaled 920 statewide.

⁶ This number includes the following degrees: RN, ASN, BSN, MSN, MS and Ph.D.

⁷ This estimate is for registered nurses and post-secondary nursing instructors combined.

Teachers: Shortage Continues

Analysis shows that in 2004-05, 5,461 first-time teacher credential candidates were generated by the California postsecondary systems⁸. The data clearly indicate that the CSU is the primary producer of teachers, followed by the independent sector, with the UC playing a minor role.

The Commission found two teacher-demand forecasts. The Employment Development Division projects 20,540 annual teacher openings between 2004 and 2014, including 10,760 new openings and 9,780 to replace people who leave the field⁹. An annual survey of principals projects 22,965¹⁰ annual openings. Whichever projection is selected, there is an annual gap of about 15,000 between new credentials awarded and openings.

An aging population of teachers suggests that demand will persist for the foreseeable future. The shortfall in the supply of teachers from California universities is made up by employing “unprepared” teachers, credentialed teachers who have left the field and are returning, and teachers from other states. The study cited earlier found that most of the shortfall is made up by employing “unprepared” teachers. “Unprepared” teachers are those who are not fully credentialed although they may be enrolled in a district or university intern program where they teach while completing required coursework, or they could possess emergency credentials or have received waivers of credential requirements. The number of unprepared teachers peaked at 42,427 statewide in 2001 and had fallen to 17,839 in 2005-06.

Lawyers: Sufficient to Meet Labor Market Demand

The Commission, as part of its assessment of the University of California, Irvine’s proposal for a new law school, undertook an extensive analysis of the supply and demand for lawyers now and in the future¹¹. The study projected total annual openings for lawyers as 2,540 in 2010 and a projected supply of 4,052 new law school graduates who are members of the bar. The study projects that a surplus of available lawyers is anticipated through 2014.

Conclusions and Policy Choices

As part of the Commission’s higher education accountability measure framework, the Commission utilized educational attainment, income and workforce data to assess the contribution of postsecondary education to California’s civic, social and economic well-being. While the Commission recognizes that California’s higher education system alone cannot determine the State’s well-being, the billions of public dollars invested annually in postsecondary education can only be justified by measuring impacts and outcomes linked to those investments. The Commission’s research shows that educational attainment of the population is shaped significantly by migration as well as by the success of California higher education institutions. Likewise, the earnings of graduates are shaped by the overall state of the economy and an ever-shifting national and international labor supply. And, while higher education needs to be concerned about educating the workers the economy demands, there will always be short-term shortages and surpluses caused by rapid shifts in the market or other factors beyond the control of higher education. Nevertheless, the Commission believes it is vital to maintaining the public’s support and faith in

⁸ Higher education institutions do actually award teaching credentials, but rather recommend students who completed the requirements to the California Commission on Teacher Credentialing who actually issues the credentials.

⁹ *California Employment Projections 2004-2014* Source: Employment Development Department Labor Market Information Division (SOC Code 25-2000)

¹⁰ Yearly report by CBEDS. Principals self-report their expected need for new and replacement teachers for the following year. Source: CDE Dataquest

¹¹ California Postsecondary Education Commission (2007) *Review of a Proposal to Establish a School of Law at the University of California, Irvine*. http://www.cpec.ca.gov/Agendas/Agenda0703/Item_04.pdf .

higher education that campus administrators and state policymakers respond as swiftly and efficiently as possible to changes in the relationship between higher education and the State's economy to ensure the best public and student outcomes.

The Commission's analysis shows that while educational attainment is growing, it is growing more slowly than the national average. If current trends continue, California's educational attainment levels will fall below the national average. Educational attainment varies dramatically across ethnic groups. There is some evidence that younger population groups may end up being less educated than the baby boomers they will replace. Finally, it appears that women are moving toward higher educational attainment levels than men.

The importing of highly-educated workers indicates that during the 1995 to 2000 technology boom era, demand for educated workers clearly exceeded the supply available in California. Baccalaureate degree holders continued to increase their earnings advantage over those with high school diplomas from 2000 to 2005, indicating continuing high demand for degree holders in the labor market.

Between 1995 and 2000, California did not expand its higher education system quickly enough to meet the demand for college-educated workers. In fact, the State cut funding for public higher education. Importing educated workers into the State has the virtue of quickly supplying needed human resources to an expanding economy. But this movement imposes costs on California employers who must bear the costs of recruiting and relocating workers. Workers who relocate to find employment incur risks and costs when moving as well. Finally, much of this movement represents high-paying jobs that did not go to Californians. Ultimately, if companies have high costs securing the highly-educated employees they need, they may consider relocating to an area with a more ample supply of qualified workers.

This analysis indicates that California would be better off if it produced more graduates to meet the growing demand. From the State's perspective, dramatically expanding the higher education system is costly. There are essentially three strategies for expansion: (1) build more campuses, (2) increase enrollments at existing campuses, and (3) increase productivity from current enrollment levels and infrastructure, which means increasing graduation rates and reducing time to degree. It takes a large investment to open new campuses, and there is a long period of development before a campus begins to produce the number and quality of graduates who can make a difference in the labor market. Many campuses are already large and approaching the limits of their ability to expand, while a few struggle to meet enrollment targets. It is difficult to quickly increase production of college graduates, and probably even more difficult to reduce the size of higher education when demand for graduates slackens. Policy-makers need to consider the pros and cons of each strategy; and probably in the long term choose a combination to expand the number of degrees awarded in the state. The commission plans to offer specific options in this area later.

Meeting the labor market demand involves not just awarding degrees but producing graduates who have the valued general skills that allow them to enter many occupations, learn quickly on the job and adapt to change as it occurs. Thus the Commission will continue to focus on the quality of teaching and learning, as this is as important as increasing the number of degrees awarded.

State policymakers need better data to track the economic and social outcomes of postsecondary students. The Commission supports linking student and workforce data in order to provide lawmakers with improved insights into the efficiency and effectiveness of postsecondary investments and to focus on efforts such as the Commission's web-based School to Employment Pathways System (STEPS) to provide students, campus and system planners with better labor market information. Because resources tend to follow higher education enrollments, if students choose disciplines that lead to jobs in growing sectors of the economy, over time these investments will align with the labor market. Similarly, if campus and system planners can use good data about labor market trends and degrees awarded by other in-

stitutions to inform their own planning and investments, alignment with the labor market should also improve.

In areas where critical labor market shortages emerge and create bottlenecks in the economy—such as the late 1990’s shortage of computer programmers and the continuing shortage of nurses and teachers—the Commission encourages the legislature and the higher education sectors to respond promptly with innovative approaches that will expand the number of people prepared in these fields. With better planning and information, institutions should be better able to foresee trends and adjust their programs to meet the demand for workers.

